ENDOCARDITIS SURGERY: NEED FOR A SPECIFIC RISK SCORING SYSTEM

To the Editor:

The study by Gaca and colleagues,[1] reporting on the outcomes of infective endocarditis (IE) surgery in a selected portion of the Society of Thoracic Surgeons (STS) database population, deserves to be praised for representing the first attempt in the literature to develop a system for operative risk assessment specific for endocarditis.

The need for a dedicated stratification tool, useful both in preoperative patient information and in bedside decision-making processes, arises from the peculiarities of IE surgery compared with general cardiac surgery: Postoperative outcomes may be influenced not only by cardiovascular anatomic and functional issues but also by systemic infective and microbiological factors. One fundamental variable affecting surgical outcome is whether a native or prosthetic valve is involved,[2] mostly because of the differential preoperative risk profiles between these 2 distinct diseases.[3] It is unfortunate that the STS database does not distinguish between native and prosthetic IE; thus, this variable was not considered when developing the proposed score system.[1] Other factors pertaining to the infectious process, including the anatomic picture (presence/absence of vegetations, perivalvular abscess, or mycotic aneurysms) and the microbiological cause, are demonstrated to independently predict outcomes.[4] In addition, these factors were lacking in the regression models of the Duke study.[1]

Consequently, the proposed risk score systems were formed by 13 and 14 risk factors for mortality and composite end point, respectively, that are generic; ''active endocarditis'' was the sole specific variable included. Indeed, Gaca and colleagues' system[1] results in being a simplification of the ''valvular'' STS score system and substantially differs from the European System for Cardiac Operative Risk Evaluation, the other most widely used tool, for only 3 factors, but not specific for infective valve disease. Both the authors' score,[1] although with a C-statistic indicating modest discriminating power, and the European System for Cardiac Operative Risk Evaluation, as recently reported by others,[5] consistently demonstrated satisfactory performances in IE prognostic stratification.

We are currently at work on a specific system for preoperative prognostic stratification of native valve IE, accounting, in multivariable analyses, also for infective and anatomic variables. Our preliminary studies (M. De Feo, MD, PhD, unpublished data, 2011) yielded a score system in which critical preoperative hemodynamic condition and renal failure were among the most important predictors of death. As Gaca and coworkers[1] outlined, this is consistent with other generic cardiac surgery risk models. However, 2 of the 6 risk factors ultimately constituting our score system were specific for the IE setting, that is, perivalvular involvement and positivity of the last preoperative blood culture (that indicates unsuccessful or incomplete antibiotic therapy), a variable significantly associated, in bivariate analysis, with positive valve culture, staphylococcal cause, emergency operation, and large vegetations.

The authoritativeness of the authors' institution in this field is undoubted, and their previous contributions to the knowledge on endocarditis have set the benchmark for us all in the daily clinical approach to this high-risk disease. However, compared with the importance and timeliness of the study purpose, the limitations affecting the regression models underlying Gaca and colleagues' score[1] constituted an important flaw.

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LATE POSTOPERATIVE PERICARDIAL EFFUSION

To the Editor:

We read with interest the article by Inan and colleagues.[1] They have come up with a good double-blind study on a poorly studied but potentially lethal complication after cardiac surgery. They state that postoperative pericardial effusion is multifactorial; however, they have come up with one magic bullet for all the factors. They also fail to tell us the nature of the drained fluid. They had a significant number of patients with mechanical aortic valves who were treated by anticoagulation and are expected to have

TABLE 1. Patient and disease profiles

Age	Diagnosis	PAP	TR	Surgery	INR	Tamponade	Surgical management/ pericardiocentesis
34	MS/MR	<60	Moderate	MVR	>7	+	Surgical drainage
38	MS/AR	>60	Severe	DVR + TV repair	>7	+	Surgical drainage
40	MS/MR	>60	Severe	MVR + TV repair	>7	−	Pericardiocentesis
40	MS/MR/AR	>60	Severe	DVR + TV repair	>7	−	Pericardiocentesis
40	MS/MR	>60	Mild	MVR	>7	+	Died

PAP, Pulmonary artery pressure; *TR,* tricuspid regurgitation; *INR,* international normalized ratio; *MS,* mitral stenosis; *MR,* mitral regurgitation; *AR,* aortic regurgitation; *MVR,* mitral valve replacement; *DVR,* double valve replacement; *TV,* tricuspid valve.

hemorrhagic pericardial fluid. This kind of pericardial effusion may not be prevented by indomethacin. We have seen 5 patients receiving anticoagulants who had late (>7 days after surgery) pericardial effusions over the past year (Table 1). All these patients had hemorrhagic effusions and high international normalized ratio (INR) values. The pathophysiology of effusions in these patients is not very clearly understood. High peaks in INR values causing prolonged oozing into the pericardial cavity is the commonly accepted theory.[2] We speculate with Wong and Pugsley[3] that congestion of the liver owing to right heart failure or tamponade physiology maybe the triggering factor for high INR values in these patients. Most patients in our experience had high pulmonary artery pressures and tricuspid regurgitation of varying severity (Table 1). Moreover, all the patients are back on anticoagulant dosages similar to their pretamponade dosages, further supporting the fact that transient liver dysfunction may have a role in abrupt increase in INR in the early postoperative period. We use indomethacin in patients who have a pericardial rub associated with pain or electrocardiographic changes suggestive of pericarditis; this is restricted to 2 to 3 days. All patients are discharged when the INR is greater than 1.7 and are reviewed 3 and 14 days after discharge. Indomethacin is a drug with many serious side effects and its use should be selective at best.

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Reply to the Editor:

We read the letter by Drs Theodore, Christi, and Christopher. The main point of the critics focuses on postoperative pericardial effusion; however, they argue about the idea of the drug for multiple purposes. One of the important properties of our article is the population involved—patients undergoing aortic surgery.[1] The patients were carefully selected for this study, and the article mainly stated the statistically confirmed data, rather than cardiac surgery experiences. Yes, there were patients who underwent aortic valve replacement besides aortic procedures, who were receiving anticoagulants in the postoperative period. However, these patients were more closely followed up for regulation of international normalized ratio than routine patients who are receiving anticoagulants. The patients who undergo valve replacement have different pathologic pathways for postoperative pericardial effusion than do patients who undergo aortic surgery.[2-4] In our study, the nature of the postoperative pericardial effusion fluid was serous, not hemorrhagic. Likewise, the nature of drained fluid during pericarditis is usually serous in origin.

In the article we suggested that the inflammatory process takes place after the aortic surgery, whether the patients receive anticoagulants or not. This is a new prospect for an unsolved problem, not a magic bullet for all.

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